

# Software Innovation in a Mission Critical Environment

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Operating in mission-critical environments requires trusted solutions, and the preference for “tried and true” approaches presents a potential barrier to infusing innovation into mission-critical systems. This presentation explores opportunities to overcome this barrier in the software domain. It outlines specific areas of innovation in software development achieved by the Johnson Space Center (JSC) Engineering Directorate in support of NASA’s major human spaceflight programs, including International Space Station, Multi-Purpose Crew Vehicle (Orion), and Commercial Crew Programs. Software engineering teams at JSC work with hardware developers, mission planners, and system operators to integrate flight vehicles, habitats, robotics, and other spacecraft elements for genuinely mission critical applications. The innovations described, including the use of NASA Core Flight Software and its associated software tool chain, can lead to software that is more affordable, more reliable, better modelled, more flexible, more easily maintained, better tested, and enabling of automation.